

METHOD AND APPARATUS FOR PACKING AND BI-DIRECTIONAL COOLING OF  
PRODUCE

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

5 This application is a continuation-in-part of co-pending application serial number  
09/590,631, <sup>now Abandoned</sup> filed June 8, 2000, which is a continuation of application serial 09/060,453 filed  
April 14, 1998 and allowed as U.S. Patent No. 6,074,676, issued on June 13, 2000, which is a  
continuation of application serial number 08/591,000, filed January 24, 1996 and issued as  
10 U.S. Patent No. 5,738,890 on April 14, 1998, and claims priority from the provisional patent  
application of the same title, filed September 11, 2001.

FIELD OF THE INVENTION

15 The present invention relates to an improved method for the improved packing,  
cooling, storage, and shipping of produce. More particularly, the present invention utilizes a  
flow of cooling air introduced into an improved container system comprising vacuum formed  
fruit containers received into and in operative combination with an improved tray design. More  
particularly still, the flow of cooling air enabled by the present invention may be in more than  
one direction relative to the container system.

BACKGROUND OF THE INVENTION

20 Many produce products are harvested and packed in the field into containers which are  
ultimately purchased by the end consumer. Examples of such produce items include, but are  
not limited to, tomatoes, berries, grapes, mushrooms, radishes and broccoli florets. Many of  
these produce items require substantial post-harvest cooling in order to enable shipping over  
25 long distances and to prolong shelf life.

In use, a grower's harvesting crew harvests produce items of the type previously  
discussed directly from the plant in the field into the container. The containers are then loaded  
into trays, which contain a specific number of individual containers and the trays, when filled,  
are loaded onto pallets. The most common pallet used in the produce industry in the United  
30 States is the forty by forty-eight inch (40" x 48") wooden pallet, and the vast majority of  
produce handling, storage and shipping equipment is designed around pallets of this size.

After the pallets have been filled and loaded in the field, they are transported to  
shippers who perform a variety of post-harvest processes to enhance the marketability of the  
produce itself. For many types of produce, including berries, a significant packing evolution is  
35 the post-harvest cooling of the packed fruit. Indeed, berry shippers are often referred to as  
"coolers". The process of cooling berries typically includes injecting a stream of cooling air